E. B. McHUGHES.

Grate.

No. 312. Patented July 29, 1837.

Fig. 1.

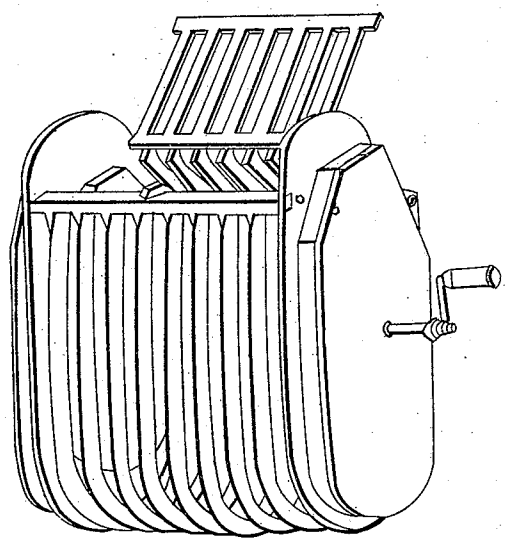


Fig. 2

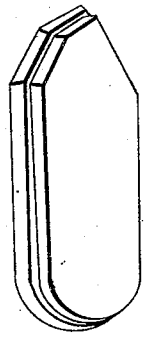
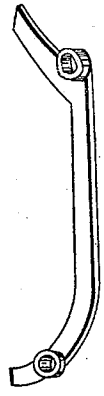


Fig. 3



Witnesses
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UNITED STATES PATENT OFFICE.

ENOS B. M. HUGHES, OF NEW HAVEN, CONNECTICUT.

REVOLVING AND SIFTING GRATE.

Specification of Letters Patent No. 312, dated July 29, 1837.

To all whom it may concern:

Be it known that I, ENOS B. M. HUGHES, of New Haven, in the county of New Haven, State of Connecticut, have invented a new and useful Improvement in Grates for Burning Hard Coal, called the "Revolving and Sifting Grate;" and I do hereby declare that the following is a full and exact description thereof.

The nature and character of my invention consists in constructing a grate for hard coal with non conducting ends, and open bars on all sides, which is suspended by journals or gudgeons, and confines the burning coals while the whole revolves or turns and sifts out the ashes and other incombustible matter which can pass between the bars.

To enable others skilled in the business of casting or manufacturing grates to make and use my invention, I proceed to describe its construction and operation.

Each end is formed of two cast iron plates about one quarter of an inch thick the inner and larger of which, corresponding in size with the body of the grate, has an opening a little less than the inner section of the grate, which opening is surrounded with a projection or flange extending one inch and one quarter outward, which flange is set one quarter of an inch from the edge of the opening in the plate. The outer and smaller plate is of the thickness of the inner plate, corresponds in size with the flange to which it is fitted and fastened, and the gudgeon formed in the usual way and on which the whole turns, projects from this plate.

A fire brick two inches thick is made to fit the opening in the inner plate, and project half an inch inside thereof, with a shoulder fitting in and filling up the opening made by the flange and which is thus covered externally and held firm by the outer plate. If the inner plate was cast with a flange and no opening the two plates would form an air chamber, which would be a partial substitute for the fire brick. Thus the non conducting ends of the grate are completed.

The sides of the grate I make with three sets of bars. The front set may be made in the usual way. The only caution to be used is to place the bars at such distances, and make them of such shape as shall best promote combustion, radiation of heat, and sifting the coal. I place the front bars about $\frac{7}{16}$ of an inch apart, make them about $\frac{5}{16}$ of an inch thick in the middle, and $\frac{11}{16}$ of an inch wide and bring them nearly to an edge on both sides.

The top set of bars are cast together in the usual way and are 8/16 of an inch thick on the inside and $\frac{7}{16}$ on the outside, connecting with a bar in front and rear and forming a door turning on the ends of the rear cross bar which project into the inner plate. The door shuts upon a rod connecting the inner plates, or any other supporter, and has a small button in front to fasten it when closed

The rear bars are cast separately and joined together by two rods $\frac{3}{8}$ of inch in diameter passing through an orifice near the ends of the bar. These bars are of the thickness of the front bars, and of such a shape as to fill up the remainder of the space not occupied by the front and top bars and complete the grate. These bars are kept at proper distances and are kept steady in their places by casting projections on them when the orifices are made for rods. The two ends of the grate are made fast to the bars or rods by uniting them with the inner plates in the usual way.

This grate may be used in a fire place, open stove, or stove constructed to receive it, but in every case must be suspended so as to revolve or turn freely on proper supporters, and when revolving a blower or other means of inclosing will be useful to prevent dust escaping into the room. And if so placed that the back bars rest against the back of the fire place, &c., then it will be necessary to make it of a circular form, or to provide that it may be first brought forward until it will have room to revolve freely. Any convenient mode of suspending or supporting the grate can be adopted which will give the opportunity to revolve, and it may be made to revolve by a crank or in any other convenient way.

The shape of the whole grate, the size and shape of the bars, I do not deem essential. The grate would be well proportioned with the sizes above mentioned, if made 14 inches long and 10 inches deep.

In the annexed drawing Figure I shows a front perspective view of the instrument with the door or top open. Fig. II. exhibits a fire brick. Fig. III. a back bar.

What I claim as my invention and desire to secure by Letters Patent is—

A revolving grate, with non conducting ends, and all sides formed with open bars, which grate confines the burning coal and sifts and cleanses it from ashes and other small incombustible particles, and I claim only what is necessary to the construction of a grate which combines, non conducting ends, all its sides formed with open bars, and a revolving motion, as described in the foregoing specification.

Dated the thirty first day of March A. D. 1837.

ENOS B. M. HUGHES.

Witnesses:

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